

### **REMARKS**

Following entry of the foregoing amendments, claims 1-19, 21-26, and 28-43 constitute the pending claims in the present application. Claims 21-26 and 28-33 are withdrawn. Claims 20 and 27 are cancelled. Claims 40-43 are newly added.

#### **Telephonic Interview with Examiner**

Applicants greatly appreciate Examiner Maier's time and attention during the telephonic interview of January 26, 2007. During the telephonic interview, the amendments presented herein were discussed and generally acknowledged by the Examiner as likely to overcome the outstanding rejections from the prior Office Action, with the exception being the present amendments to claims 3-4 discussed below under the rejection under 35 U.S.C. 102(b) over Hristova-Kazmierski, Minami, Yano, and Tanaka, the Examiner having reserved the right to consider the compliance of these amendments with 35 U.S.C. 112, First Paragraph.

#### **Amendments and New Claims**

In order to more particularly define the presently claimed invention, Applicants have amended claim 1 to recite that "P comprises cyclodextrin moieties alternating with linker moieties in the polymer backbone or n is at least 1, wherein a plurality of linker moieties in the backbone are attached to a therapeutic agent that is releasable under biological conditions." These amendments find support in the application as originally filed. See, for example, paragraph 0185 of the published application.

Additionally, Applicants have also amended claims 1-4 and 39 for clarity (*vide infra*).

Applicants have added new claims 40-43. Support for these claims can be found in the specification as originally filed, for example, on page 1, lines 21-22; page 3, lines 10-11; page 17, lines 16-17; page 37, lines 25-27; and pages 76-80.

These amendments and new claims present no new matter. Applicants respectfully request reconsideration in view of the following remarks. Issues raised by the Examiner will be addressed below in the order they appear in the prior Office Action.

1. Claim Rejections – 35 U.S.C. 112, Second Paragraph

Claims 1-19 and 35-39 are rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for allegedly failing to point out and distinctly claim the subject matter which Applicants regard as the claimed invention. The Office contends that it is not clear how the previous amendments reciting “linear” polymers differs over “branched” polymers since “the structural formulas appear to allow for a structure that is consistent with the specification’s description of ‘branched.’”

Applicants disagree and respectively highlight that the specification at paragraph 0082 of the published application states that “a branched cyclodextrin-containing polymer refers to a polymer *backbone* with a plurality of branch points, wherein each branch point is a starting point of yet *another* strand of the polymer *backbone*.” (emphasis added). Applicants further submit that “backbone” is an art-recognized term that refers to the polymer chain(s) that includes the repeating chemical units of the polymer. Thus, a “branched” polymer is distinct from a “linear” polymer, which the art recognizes as a polymer with a backbone including no additional branching. Applicants respectfully point out that polymers which include pendant side chains emanating from a linear backbone fall within the ambit of “linear” polymers, provided of course that the side chains are not additional backbones, *i.e.*, that the side chains do not comprise repeating chemical units of the linear backbone. Hence, the present claims are directed to polymers with linear backbones and thus exclude polymers with branched backbones. The present claims either recite the linear feature in words (claims 1, 3, 4, 34, and 39) or explicitly in the formulas (claims 2, 3, and 4 depict the polymer backbone as having only two points of attachment extending from the monomer, thus depicting a linear polymer) and convey with clarity and definiteness the claimed subject matter. However, for the sake of advancing prosecution, Applicants have also amended claims 1-4 and 39 to explicitly recite that the polymers have linear *backbones*. Accordingly, Applicants request reconsideration and withdrawal of the indefiniteness rejection over claims 1-19 and 35-39.

Additionally, the Office considers claim 1 to be unclear, in particular the antecedence for “linker.” Applicants respectfully point out that claim 1 does not technically recite any “linkers” but rather “linker groups” (linker species  $L_1$ ,  $L_2$ , and  $L_3$  on pendant side chains) and “linker moieties”

(linker species within the polymer backbone). The term “linker” is used only as an adjective in claim 1 and throughout the claim set. When the claim set is viewed in this light, Applicants submit that the antecedence between the final and penultimate lines of claim 1 is clear since both refer to linker *moieties* (as opposed to linker *groups*, L<sub>1</sub>, L<sub>2</sub>, and L<sub>3</sub>). Some of the dependent claims, *e.g.*, claims 5 and 6, explicitly recite both linker groups and linker moieties, thus distinguishing between these two instances of linker species.

Although the Examiner contends that “the compound [of claim 1] requires at least one linker –*somewhere* – comprising a therapeutic agent” (emphasis added), Applicants disagree and note that instant claim 1 is specific as to the location of the linker group or linker moiety bearing a therapeutic agent. Notably, present claim 1 recites that the compound includes at least one linker group (*i.e.*, L<sub>2</sub>, in a side chain) with a therapeutic agent or a prodrug thereof (*i.e.*, D, since “a” is at least 1 and “b” is at least 1) wherein either P comprises a plurality of linker moieties (*i.e.*, in the polymer backbone) with a therapeutic agent or n is at least 1. However, to further clarify Applicants have amended claim 1 to recite that a plurality of linker moieties are “in the backbone” and “are attached” to a therapeutic agent. Accordingly, Applicants submit claim 1 is clear in its present form but stand ready to cooperate with the Examiner to arrive at additional clarifying language if even in view of the above discussion the Office still considers otherwise.

2. Claim Rejections – 35 U.S.C. 112, First Paragraph

Claims 1, 2, 5-19 and 35-38 are rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the written description requirement. The Office asserts that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that Applicants had possession of the claimed invention at the time of filing. Specifically, the Office submits that page 16, lines 1-4 of the specification as originally filed does not support the feature of claim 1 “wherein at least one linker moiety includes a therapeutic agent.”

Applicants disagree and submit that one skilled in the art would readily find that the specification teaches the objected feature of claim 1. However, to expedite prosecution, Applicants

have amended claim 1 to recite “wherein a plurality of linker moieties ...” The Office has indicated that language utilizing the term “plurality” is supported. Moreover, Applicants submit that the skilled artisan, on reading page 16, lines 1-4 of the specification as originally filed, would conclude that the specification teaches a polymer having a plurality of linker moieties in the backbone attached to a therapeutic agent. As such, Applicants request reconsideration and withdrawal of the written description rejection over claims 1, 2, 5-19 and 35-38.

3. Claim Rejections – 35 U.S.C. 102(b) over WO 00/01734 to Gonzalez et al.

Claims 1-3, 5, 7, 10-18, 35, and 38-39 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by WO 00/01734 to Gonzalez et al. (“Gonzalez”). Applicants traverse the rejection to the extent that it is maintained over the claims as amended.

As noted previously, according to the Office, Gonzalez discloses linear cyclodextrin copolymers including an embodiment wherein a folic acid moiety is covalently attached to a copolymer. The Office considers that “ligands” in the art and “therapeutic agents” of the claims are not mutually exclusive. The Office further considers that the folic acid moiety is described in Gonzalez as a ligand “similar to the ‘targeting ligands’ in the instant invention” and that the folic acid moiety “is also consistent with Applicant’s definition of therapeutic agent.”

Nevertheless, Applicants assert that Gonzalez does not teach or suggest all the features of claims 1, 3, and 39 as currently amended. In particular, regarding claim 1, Gonzalez does not teach or suggest a polymeric compound comprising cyclodextrin moieties alternating with linker moieties in the polymer *backbone* ... wherein a plurality of linker moieties *in the backbone* are attached to a therapeutic agent. Moreover, as noted above, Applicants have amended claim 1 to recite that the therapeutic agents attached to the linker moieties in the backbone are releasable under biological conditions. Without conceding that folic acid is a therapeutic agent, Applicants note that the folic acid embodiments of Gonzalez (Examples 17 and 18) relate to a cyclodextrin polymer wherein the folic acid group is attached to the polymer via a linker that is *not* a repeating unit of the polymer backbone, *i.e.*, the folic acid group is not directly attached to a repeating linker moiety. Neither is the folic acid group of Gonzalez indirectly attached to a repeating linker moiety, for example, via a

linker group. In short, the folic acid group of Gonzales is not attached to a linker moiety that alternates in the polymer backbone with cyclodextrin moieties. Importantly, the folic acid embodiments of Gonzalez are also not taught or suggested to be releasable.

Regarding claim 3, Applicants again note that Gonzalez does not teach or suggest linear polymeric compounds with the particular structure of Formula II recited therein, *i.e.*, polymers with one or more cyclodextrin moieties or derivatives *not* part of the polymer chain/backbone. The Office appears to consider that claim 3 requires a cyclodextrin and a therapeutic agent be present *anywhere*. Applicants respectfully disagree and point out that in the language of claim 3 “CD” is not interchangeable with “cyclodextrin” (otherwise the claim would be inconsistent in using both of these terms). Rather, as recited in the claim, CD represents a cyclodextrin moiety or derivative thereof *at the specified position* as recited in Formula II, *i.e.*, at a position on a pendant side-chain. Claim 3 recites that CD (not simply a cyclodextrin) is present at least once in the compound. Thus, for at least one occurrence of “n,” “n” is not equal to 0. Applicants further highlight that there can be many occurrences of “n,” since there are up to about 30,000 repeating units of Formula II, and that the occurrences of “n” are *independent*. Consequently, the compound of claim 3 recites that there is at least one cyclodextrin moiety or derivative thereof that is not part of the polymer chain/backbone but positioned on a side chain (*i.e.*, at least one CD). This is a feature that is not taught or suggested in Gonzalez.

Regarding claim 39, the Office submits that “this claim is subject to the same rejection used previously for claims 1, 12, and 35.” However, the Office Action of May 10, 2006 provided no guidance as to why claims 12 and 35 were rejected over Gonzalez. Applicants respectfully highlight that the Office has the initial burden of establishing anticipation, and in satisfying this burden “it is incumbent upon the Patent Office...to set forth clearly why it regards a claim to be anticipated...” *In re Mullin*, 481 F.2d 1333, 1336, 179 U.S.P.Q. 97, 100 (C.C.P.A. 1973). Applicants submit that the Office must distinctly point out why a reference anticipates a claim. For claim 39, Applicants assert that Gonzalez does not teach or suggest the particular compound recited in Formula I, for example, bearing the particular D groups recited therein. Since Applicants do not concede that folic acid is a therapeutic agent, Applicants submit *a fortiori* that folic acid does not

satisfy any of the therapeutic agent types listed in claim 39. In order to sustain the outstanding rejection, the Office has the burden of showing that the compound of Formula I of claim 39 with the particular D groups recited therein has been taught in the prior art, and this burden has not been met.

Since a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference (see MPEP 2131, quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)), Gonzalez does not anticipate claims 1, 3, and 39 or any claims dependent thereon. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

4. Claim Rejections – 35 U.S.C. 102(b) over Hristova-Kazmierski, Minami, Yano, and Tanaka

Claims 3-5, 7, 10-16, 19, and 35 remain rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Hristova-Kazmierski et al. *Bio. Med. Chem. Lett.* **1993**, 3, 831-834 (“Hristova”); Minami et al. *J. Pharm. Sci.* **1998**, 87, 715-720 (“Minami”); Yano et al. *J. Pharm. Sci.* **2001**, 90, 493-503 (“Yano”); or US 5,183,883 to Tanaka et al. (“Tanaka”). Applicants traverse the rejection to the extent that it is maintained over the claims as amended.

Applicants previously argued that Hristova, Minami, Yano, and Tanaka do not teach or suggest all the limitations of claims 3-4. Notably, these references do not teach or suggest a linear *polymeric* compound such as those depicted in Formulas II and III of claims 3 and 4, respectively. In response to Applicants’ arguments of record, the Office has not given patentable weight to the term “polymeric” in view of the recitation that variables “o” in claim 3 and “h” in claim 4 are integers within the range 1 to about 30,000. Applicants contend that “polymeric” is a term that should be given patentable weight in the rejected claims. To clarify the claims and expedite prosecution, Applicants have amended the claims to delete the recitation of variables “o” and “h” from claims 3 and 4, respectively. As such, claims 3 and 4 unambiguously recite *polymeric* compounds with up to about 30,000 repeating units.

In support of these amendments, Applicants assert that the present application in numerous places teaches such polymeric compounds. Moreover, Applicants assert that it is inherent in the meaning of “polymer” that there exist more than one unit of the repeating monomer. In support of

this, Applicants attach herewith Exhibits A, B, and C, print-outs from the websites [www.thefreedictionary.com/p/polymer](http://www.thefreedictionary.com/p/polymer), [www.biochem.northwestern.edu/holmgren/Glossary/Definitions/Def-P/polymer.html](http://www.biochem.northwestern.edu/holmgren/Glossary/Definitions/Def-P/polymer.html), and [www.biology-online.org/dictionary/Polymer](http://www.biology-online.org/dictionary/Polymer), respectively, and Exhibit D, a photocopy from *The American Heritage Dictionary, 4<sup>th</sup> Ed.* (2000), which recite definitions of “polymer.” These references all specify that a polymer is composed of *repeating* units; *i.e.*, a polymer necessarily includes more than one unit. The skilled artisan on reading Applicants’ application would readily appreciate that Applicants taught compounds comprising repeating monomeric units, compounds with more than one monomeric unit. The present amendments therefore satisfy 35 U.S.C. 112, First Paragraph.

As such, recitation of “polymeric” in claims 3 and 4 should be given patentable weight. Since none of Hristova, Minami, Yano, or Tanaka teach or suggest polymeric compounds, compounds with repeating monomeric units, none of these can be said to anticipate claims 3 or 4 or claims dependent thereon. Accordingly, Applicants request reconsideration and withdrawal of the rejection.

5. Claim Rejections – 35 U.S.C. 103(a) over WO 00/01734 to Gonzalez et al.

Claims 1-3, 5, 7, 12-19, and 35-39 stand rejected under 35 U.S.C. 103(a) as allegedly being obvious in view of Gonzalez. Applicants traverse the rejection to the extent that it is maintained over the claims as amended.

The Office acknowledges that Gonzalez does not exemplify “a polymeric compound comprising cyclodextrin moieties alternating with linker moieties in the polymer chain ... wherein at least one linker moiety includes a therapeutic agent.” Nevertheless, the Office alleges that Gonzalez does in fact suggest such a product, referring to the paragraph bridging pages 13 and 14 of Gonzalez. Applicants still do not concede that “ligands” recited in Gonzalez include “therapeutic agents” as recited in the present claims. Moreover, regarding claim 1, Applicants further highlight that Gonzalez does not recite that the ligands recited therein are releasable under biological conditions as recited for the therapeutic agents included with the linker moieties of claim 1. Hence,

as noted above, Gonzalez does not teach or suggest all the claimed features of claim 1. Concerning claim 3, again Gonzalez does not teach all the features of this claim, in particular, polymers with one or more cyclodextrin moieties or derivatives *not* part of the polymer chain/backbone. Regarding claim 39, the Office has not presented any reasoning or rationale for why this claim is allegedly obvious over Gonzalez. Again, as presented above, Applicants point out that Gonzalez does not teach or suggest the particular compound recited in Formula I of claim 39, for example, bearing the particular D groups recited therein.

Consequently, Gonzalez does not teach or suggest all the features of claims 1, 3, or 39 or those dependent thereon. Pursuant to MPEP 2142, “[t]o establish a prima facie case of obviousness...the prior art reference (or references when combined) must teach or suggest all the claim limitations.” *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As such, the present claims are non-obvious over Gonzalez, and Applicants respectfully request reconsideration and withdrawal of the rejection.

6. Claim Rejections – Obviousness-Type Double Patenting over US 6,884,789 and US 6,509,323

Claims 1-3, 5, 7, 12-19, and 35 stand rejected under the judicially created doctrine of obviousness-type double patenting over claim 7 of US 6,884,789 (“the ‘789 patent”) and over claim 4 of US 6,509,323 (“the ‘323 patent”). Applicants traverse the rejection to the extent that it is maintained over the claims as amended.

The Office maintains the above rejection continuing to rely on the specifications of the ‘789 and ‘323 patents to read into the claims of these patents limitations that are simply not there. In particular, the Office alleges that claims 3 and 8 (apparently of the ‘789 and ‘323 patents, respectively) recite the use of linkers comprising functional groups “suitable for attaching a ligand, as suggested in the *written description* of the products...” (emphasis added). Although the specification of the patent supporting the rejection may be relied on to interpret terms in the claims of the patent, as Applicants have noted previously, reliance on the written description of the cited art to import features not recited in the claims is improper in the context of an obviousness-type double



patenting rejection (MPEP 804). Hence, the present obviousness-type double patenting rejections should be withdrawn for at least this reason.

Moreover, the Office still has advanced no rationale or evidence to satisfy the obviousness requirements of motivation and reasonable expectation of success of the outstanding obviousness-type double patenting rejection. For the requirement that the cited art must teach all the limitations of the present claims, the Office has not presented sufficient evidence to satisfy this requirement either. For example, the Office has not indicated where in claim 7 or 3 of the '789 or '323 patent, respectively, is taught or suggested a polymer comprising "cyclodextrin moieties alternating with linker moieties in the polymer backbone ... wherein a plurality of linker moieties in the backbone include a therapeutic agent that is releasable *under biological conditions*" as recited in claim 1. (emphasis added). Similarly, for claim 3, the Office has not indicated where claim 7 or 3 of the '789 or '323 patent, respectively, teaches or suggests the particular features of the polymer claimed, such as polymers with one or more cyclodextrin moieties or derivatives *not* part of the polymer chain/backbone.

In light of the deficiencies mentioned above of the present obviousness-type double patenting rejection, Applicants request reconsideration and withdrawal of the rejection of claims 1 and 3 and claims dependent thereon.

#### 7. Allowable Subject Matter

Applicants appreciate the indication of allowance of claim 34. Applicants assert that the amendments made herein do not in anyway affect the Office's determination that claim 34 is allowable.

### CONCLUSION

In view of the foregoing amendments and remarks, Applicants submit that the pending claims are in condition for allowance. Early and favorable reconsideration is respectfully solicited.

The Examiner may address any questions raised by this submission to the undersigned at 617-951-7000. Should an extension of time be required, Applicants hereby petition for same and

request that the extension fee and any other fee required for timely consideration of this submission be charged to Deposit Account No. 18-1945, under Order No. ITI-P01-008, from which the undersigned is authorized to draw.

Dated: February 13, 2007

Respectfully submitted,

By  \_\_\_\_\_

Carl A. Morales, Ph.D.

Registration No.: 57,415

FISH & NEAVE IP GROUP

ROPES & GRAY LLP

One International Place

Boston, Massachusetts 02110-2624

(617) 951-7000

(617) 951-7050 (Fax)

Attorneys/Agents For Applicant

**pol·y·mer**  (pŏl'ə-mər)

*n.*

Any of numerous natural and synthetic compounds of usually high molecular weight consisting of up to millions of repeated linked units, each a relatively light and simple molecule.

[Greek *polumerĕs*, *consisting of many parts*: *polu-*, *poly-* + *meros*, *part*; see (s) *mer*-<sup>2</sup> in Indo-European roots.]

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## Thesaurus Legend: [Synonyms] [Related Words] [Antonyms]

**Noun 1. polymer** - a naturally occurring or synthetic compound consisting of large molecules made up of a linked series of repeated simple monomers

**chemical compound, compound** - (chemistry) a substance formed by chemical union of two or more elements or ingredients in definite proportion by weight

**deoxyribonucleic acid, desoxyribonucleic acid, DNA** - (biochemistry) a long linear polymer found in the nucleus of a cell and formed from nucleotides and shaped like a double helix; associated with the transmission of genetic information; "DNA is the king of molecules"

**ribonucleic acid, RNA** - (biochemistry) a long linear polymer of nucleotides found in the nucleus but mainly in the cytoplasm of a cell where it is associated with microsomes; it transmits genetic information from DNA to the cytoplasm and controls certain chemical processes in the cell; "ribonucleic acid is the genetic material of some viruses"

**synthetic resin** - a resin having a polymeric structure; especially a resin in the raw state; used chiefly in plastics

**copolymer** - a polymer consisting of two or more different monomers

**polyurethan, polyurethane** - any of various polymers containing the urethane radical; a wide variety of synthetic forms are made and used as adhesives or plastics or paints or rubber

**lignin** - a complex polymer; the chief non-carbohydrate constituent of wood; binds to cellulose fibers to harden and strengthen cell walls of plants

**polyamide, polymeric amide** - a polymer containing repeated amide groups

**silicone, silicone polymer** - any of a large class of siloxanes that are unusually stable over a wide range of temperatures; used in lubricants and adhesives and coatings and synthetic rubber and electrical insulation

**trimer** - a polymer (or a molecule of a polymer) consisting of three identical monomers

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## Polymer

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### Definition:

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A molecule composed of repeated subunits.

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## Polymer

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polymer

(Science: chemistry) A macromolecule made of repeating (monomer) units or protomers.

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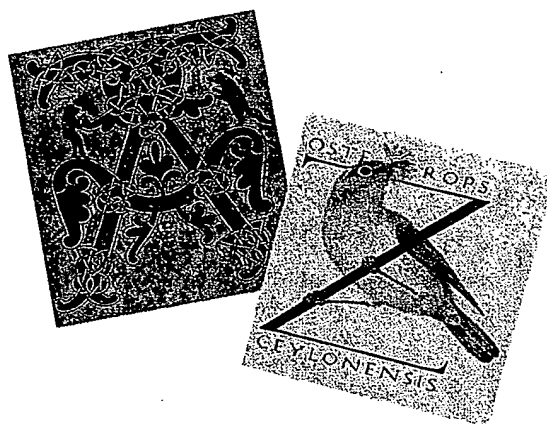
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**poly•gene** (pól/ē-jēn') *n.* Any of a group of nonallelic genes, each having a small quantitative effect, that together produce a wide range of phenotypic variation. Also called *multiple factor*, *quantitative gene*.

**poly•gen•e•sis** (pól/ē-jēn/ē-sis) *n.* Derivation of a species or type from more than one ancestor or germ cell. —**poly•gen/ē•sist** *n.*

**poly•gen•e•tic** (pól/ē-jēn/ē-tik) *adj.* 1. Of or relating to polygenesis; polyphyletic. 2. Having more than one source or origin.

**poly•gen•ic** (pól/ē-jēn/ik) *adj.* Of, relating to, or determined by polygenes: *polygenic inheritance*. —**poly•gen/ē•cal•ly** *adv.*

**poly•glot** (pól/ē-glót') *adj.* Speaking, writing, written in, or composed of several languages. *n.* 1. A person having a speaking, reading, or writing knowledge of several languages. 2. A book, especially a Bible, containing several versions of the same text in different languages. 3. A mixture or confusion of languages. [French *polyglotte*, from Greek *polu-glōttos*: *polu-*, *poly-* + *glōtta*, tongue, language.] —**poly•glot/ism**, **poly•glot/tism** *n.*

**poly•gon** (pól/ē-gōn') *n.* A closed plane figure bounded by three or more line segments. —**poly•gō•nal** (pō-lig'ō-nāl) *adj.* —**poly•gō•n•al•ly** *adv.*

**poly•lyc•o•num** (pō-lig'ō-nəm) *n.* Any of numerous plants of the widely distributed genus *Polygonum*, characterized by stems with knot-like joints and conspicuous sheathlike stipules. [New Latin *Polygonum*, genus name, from Greek *polugonon*, knotgrass: *polu-*, *poly-* + *gonu*, knee; see *gonu-* in Appendix I.]

**poly•graph** (pól/ē-gráf') *n.* An instrument that simultaneously records changes in physiological processes such as heartbeat, blood pressure, and respiration, often used as a lie detector. *tr.v.* —**graphed**, —**graphing**, —**graphs** To test (a criminal suspect, for example) with a polygraph. —**poly•g•ra•pher** (pō-lig'ō-rā-far), **poly•g•ra•phist** (-fist) *n.* —**poly•g•ra•phic** *adj.*

**poly•g•y•ny** (pō-lig'ō-nē) *n.* 1. The condition or practice of having more than one wife at one time. 2. *Zoology* A mating pattern in which a male mates with more than one female in a single breeding season. —**poly•g•y•n•ous** *adj.*

**polyhedral angle** *n.* A shape formed by three or more planes intersecting at a common point.

**poly•hed•ron** (pól/ē-hē/drən) *n.*, *pl.* —**drons** or —**dra** (-dra) A solid bounded by polygons. —**poly•yhe•dral** *adj.*

**poly•hed•ro•sis** (pól/ē-hē/drō/sis) *n.*, *pl.* —**ses** (-sēz) Any of several diseases of insect larvae, caused by infestation with polyhedral virus particles.

**poly•his•tor** (pól/ē-his/tər) *n.* A person with broad knowledge. [Latin *Polyhistōr*, from Greek *poluistōr*, very learned: *polu-*, *poly-* + *histōr*, learned; see *weid-* in Appendix I.] —**poly•his•tor/ic** (-hī-stōr/ik, -stōr/-) *adj.*

**poly•hy•dric** (pól/ē-hī/drīk) *adj.* Containing at least two hydroxyl groups.

**poly•hym•ni•a** (pól/ē-hīm/nē-ə) also **Poly•hym•ni•a** (pō-līm/nē-ə) *n.* *Greek Mythology* The Muse of sacred song and oratory.

**poly•I:C** (pól/ē-ī/sēl') *n.* A synthetic polymer of inosine that resembles the RNA of infectious viruses and is used to stimulate the production of interferon by the immune system. [POLY- + I (NOSINIC ACID) + C (ytidylic acid) (CYTIDINE) + -YL + -IC.]

**poly•im•ide** (pól/ē-īm/īd') *n.* A synthetic polymeric resin of a class resistant to high temperatures, wear, and corrosion, used primarily as a coating or film on a substrate substance.

**poly•lin•gual** (pól/ē-līng/gwəl) *adj.* 1. Of, including, or expressed in several languages; multilingual: a *polylingual software program*. 2. Using or able to use several languages: a *polylingual translator*.

**poly•math** (pól/ē-māth') *n.* A person of great or varied learning. [Greek *polumathēs*: *polu-*, *poly-* + *mathanein*, *math-*, to learn; see *mendh-* in Appendix I.] —**poly•math/**, **poly•math/ic** *adj.* —**poly•math/a•thy** (pō-līm'ā-thē) *n.*

**poly•mer** (pól/ā-mər) *n.* Any of numerous natural and synthetic compounds of usually high molecular weight consisting of up to millions of repeated linked units, each a relatively light and simple molecule. [Greek *polimerēs*, consisting of many parts: *polu-*, *poly-* + *meros*, part; see (s)mer- in Appendix I.]

**poly•mer•ase** (pól/ā-mā-rās', -rāz') *n.* Any of various enzymes, such as DNA polymerase, RNA polymerase, or reverse transcriptase, that catalyze the formation of polynucleotides of DNA or RNA using an existing strand of DNA or RNA as a template.

**polymerase chain reaction** *n.* *Abbr.* PCR A technique for amplifying DNA sequences in vitro by separating the DNA into two strands and incubating it with oligonucleotide primers and DNA polymerase. It can amplify a specific sequence of DNA by as many as one billion times and is important in biotechnology, forensics, medicine, and genetic research.

**poly•mer•ic** (pól/ā-mēr/ik) *adj.* Of, relating to, or consisting of a polymer. —**poly•mer/ē•cal•ly** *adv.* —**poly•mer/ē•ism** (pō-līm'ā-riz'm, pól/ā-mā-) *n.*

**poly•mer•i•za•tion** (pō-līm'ār-ī-zā'shən, pól/ā-mār-) *n.* 1. The bonding of two or more monomers to form a polymer. 2. A chemical process that effects this bonding.

**poly•mer•ize** (pól/ā-mā-rīz', pō-līm'ā-) *intr.* & *tr.v.* —**ized**, —**izing**, —**izes** To undergo or subject to polymerization.

**poly•mer•ous** (pō-līm'ār-əs) *adj.* *Biology* Consisting of numerous parts, members, or segments.

**Poly•hym•ni•a** (pō-līm/nē-ə) *n.* *Greek Mythology* Variant of Polyhymnia.

**poly•morph** (pól/ē-mōrf') *n.* 1. *Biology* An organism character-

ized by polymorphism. 2. *Chemistry* A specific crystalline form of a compound that can crystallize in different forms.

**poly•mor•phism** (pól/ē-mōrf/iz'm) *n.* 1. *Biology* The occurrence of different forms, stages, or types in individual organisms or in organisms of the same species, independent of sexual variations. 2. *Chemistry* Crystallization of a compound in at least two distinct forms. Also called *pleomorphism*. —**poly•mor/φic**, **poly•mor/φous** *adj.* —**poly•mor/φous•ly** *adv.*

**poly•mor•pho•nu•cle•ar** (pól/ē-mōrf'ō-nūklē-ər, -nyōō/-) *adj.* Having a lobed nucleus. Used especially of neutrophil white blood cells. *n.* A polymorphonuclear cell.

**polymorphous perverse** *adj.* Characterized by or displaying sexual tendencies that have no specific direction, as in an infant or young child, but that may evolve into acts that are regarded as perversions in adults.

**poly•myx•in** (pól/ē-mīk/sin) *n.* Any of various mainly toxic antibiotics derived from strains of the soil bacterium *Bacillus polymyxa* and used to treat various infections with gram-negative bacteria. [New Latin *polymyxa*, specific epithet (POLY- + Greek *muxa*, slime) + -IN.]

**Poly•ne•sia** (pól/ā-nē/zhə, -shə) A division of Oceania including scattered islands of the central and southern Pacific Ocean roughly between New Zealand, Hawaii, and Easter Island. The larger islands are volcanic, the smaller ones generally coral formations.

**Poly•ne•sian** (pól/ā-nē/zhən, -shən) *adj.* Of or relating to Polynesia or its peoples, languages, or cultures. *n.* 1. A native or inhabitant of Polynesia. 2. A subfamily of the Austronesian language family spoken in Polynesia.

**poly•neu•ri•tis** (pól/ē-nūō-rī'tis, -nyōō/-) *n.* See *multiple neuritis*. —**poly•neu•rit/ic** (-rī/tik) *adj.*

**Poly•ni•ces** (pól/ā-nī/sēz) *n.* *Greek Mythology* A son of Oedipus and Jocasta for whom an expedition against Thebes was raised.

**poly•no•mi•al** (pól/ē-nō/mē-əl) *adj.* Of, relating to, or consisting of more than two names or terms. *n.* 1. A taxonomic designation consisting of more than two terms. 2. *Mathematics* a. An algebraic expression consisting of one or more summed terms, each term consisting of a constant multiplier and one or more variables raised to integral powers. For example,  $x^2 - 5x + 6$  and  $2p^2q + y$  are polynomials. Also called *multinomial*. b. An expression of two or more terms. [POLY- + (BI)NOMIAL.]

**poly•nu•cle•o•tide** (pól/ē-nūō/klē-ō-tīd', -nyōō/-) *n.* A polymeric compound, usually DNA or RNA, consisting of a number of nucleotides.

**poly•ny•ya** (pól/ān-yā, pō-līn'yā) *n.* An area of open water surrounded by sea ice. [Russian *polyn'ya*, from *polyt*, open, hollow. See *pelā-* in Appendix I.]

**poly•o•ma** (pól/ē-ō/mā) *n.* A small form of the papovavirus that contains DNA and is associated with the formation of various tumors in rodents. Also called *polyoma virus*.

**poly•yp** (pól/īp) *n.* 1. A coelenterate, such as a hydra or coral, having a cylindrical body and an oral opening usually surrounded by tentacles. 2. A usually nonmalignant growth or tumor protruding from the mucous lining of an organ such as the nose, bladder, or intestine, often causing obstruction. [Middle English *polip*, nasal tumor, from Old French *polipe*, from Latin *polypus*, cuttlefish, nasal tumor, from Greek *polupous*, *poulipous*: *polu-*, *poly-* + *pous*, foot; see *ped-* in Appendix I.] —**poly•yp•oid** *adj.*

**poly•par•y** (pól/ā-pēr/ē) also **poly•par•i•um** (pól/ā-pār/ē-əm) *n.*, *pl.* —**ies** also —**ia** (-ē-ə) The common supporting framework of a colony of polyps, especially of coral.

**Poly•pay** (pól/ē-pā') *n.* Any of a breed of beige-colored sheep developed in the United States, raised for meat and wool and valued for their hardiness and frequent lambing. [POLY- (from its having been bred from multiple breeds) + PAY (from its good return on labor and investment).]

**poly•pep•tide** (pól/ē-pēp/tīd') *n.* A peptide, such as a small protein, containing many molecules of amino acids, typically between 10 and 100.

**poly•pet•al•ous** (pól/ē-pēt'l-əs) *adj.* Having separate petals, as on the corolla of a rose or carnation.

**poly•pha•gi•a** (pól/ē-fā/gē-ə, -jə) **poly•ph•a•gy** (pō-līf'ā-jē) *n.* 1. An excessive or pathological desire to eat. 2. *Zoology* The habit of feeding on many different kinds of food. —**poly•pha•gi•an** *adj.*

**poly•ph•a•gous** (pō-līf'ā-gəs) *adj.* Feeding on many different kinds of food: *polyphagous insects or birds*.

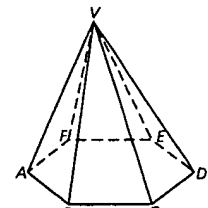
**Poly•phe•mus** (pól/ā-fē/mās) *n.* *Greek Mythology* The Cyclops who confined Odysseus and his companions in a cave until Odysseus blinded him and escaped. [Latin *Polyphēmus*, from Greek *Poluphēmos*, from *poluphēmos*, famous: *polu-*, much; see POLY- + *phēmē*, saying, report; see *bhā-* in Appendix I.]

**poly•phe•mus moth** (pól/ā-fē/mās) *n.* A large North American silkworm moth (*Antheraea polyphemus*) having an eyelike spot on each hind wing. [After POLYPHEMUS, from the ocellus on its hind wings.]

**poly•phone** (pól/ē-fōn') *n.* A written character or combination of characters having two or more phonetic values, such as the letter *a* or *i* in English.

**poly•phon•ic** (pól/ē-fōn/ik) *adj.* 1. *Music* Of, relating to, or characterized by polyphony. 2. *Linguistics* Having two or more phonetic values. —**poly•phon/ē•cal•ly** *adv.*

**poly•ph•o•ny** (pō-līf'ā-nē) *n.*, *pl.* —**nies** Music with two or more independent melodic parts sounded together. —**poly•ph•o•n•ous** *adj.* —**poly•ph•o•n•ous•ly** *adv.*



**polyhedral angle**  
Lateral faces  
VAB, VBC, VCD, VDE,  
and VEF join at the  
common vertex V to  
form a polyhedral angle.



**polyphemus moth**  
*Antheraea polyphemus*

|          |               |
|----------|---------------|
| a pat    | oi boy        |
| a pay    | ou out        |
| ai care  | oo took       |
| a father | oo boot       |
| e per    | u cut         |
| e be     | ur urge       |
| i pin    | th thin       |
| i pie    | th this       |
| ir pier  | hw which      |
| o pot    | zh vision     |
| o toe    | a about item  |
| o paw    | ♦ regionalism |

Stress marks: (primary);  
(secondary); as in:  
dictionary (dik'shə-nēr-ē).



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